

Splenic Salvage

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ABSTRACT

Three cases of conservation of the ruptured spleen are reported. These show that the traumatised spleen may be salvaged by operative splenectomy in some patients with an injured spleen.

INTRODUCTION

Until recently, splenectomy had been regarded as the treatment of choice for traumatic rupture of the spleen. However, in their classic paper, King and Schumacker (1952) suggested that children who had splenectomy were more susceptible to both major and minor infections. Subsequently, other workers have confirmed this suspicion and documented increased morbidity and mortality from sepsis in splenectomised children (Eraklis and Filler, 1972; Walker, 1976). Singer (1973), in an extensive review of post-splenectomy sepsis, studied 2,795 patients and established that adults were also prone to the infective complications of splenectomy. Because of this, conservation of the ruptured spleen, when possible, is now recommended by many workers (Mishalany, 1974; Douglas and Simpson, 1971; Ratner et al, 1977). This paper reports our experience with conservation of the ruptured spleen.

CASE REPORTS

Case 1

A 19-year-old negro man was admitted to hospital 2 hours after being involved in a motor vehicle accident. He was fully conscious and complained of abdominal pain. He was pale, hypotensive (bloodpressure 90/60 mm Hg), pulse 120/min, and had generalised abdominal tenderness with rebound. Chest and abdominal X-rays showed some elevation of the left hemidiaphragm and medial displacement of the gastric bubble. The haemoglobin level was 11.8 gm/dl. At emergency laparotomy through an upper midline incision, 1,100 ml of blood were sucked out of the peritoneal cavity. The only injury was a laceration of the spleen which extended from the hilum to the anterior border and involved the full thickness of the organ, from the visceral to the diaphragmatic surface. The spleen was delivered into the wound by incision of the leinorenal ligament and the laceration repaired, using full-thickness interrupted sutures of 2/0 chromic catgut which resulted in good haemostasis. The patient was given 1 unit of blood during surgery, had an uneventful post-operative recovery and was discharged on the eighth post-operative day.

Case 2

An 8-year-old East Indian girl sustained a blow over the area of the spleen when she collided with a chair while running. She was admitted 4 hours later with left upper abdominal pain. On examination, she was a well-looking girl with pink mucous membranes, a pulse of 96/min and a bloodpressure of 100/70 mm Hg. There was mild tenderness over the left lower chest posterolaterally and in the left hypochondrium. The rest of the chest and abdomen were clinically normal. With a suspicion of a splenic injury, an intravenous line was started and the child was carefully monitored. Twelve hours later, though still haemodynamically stable and without abdominal distension, the mild abdominal tenderness had become generalised with maximal tenderness in the left hypochondrium. Ultrasound at this time showed bloodclots surrounding the spleen and some free fluid in the peritoneal cavity.

Paracentesis in the left iliac fossa confirmed the presence of blood in the abdomen but in view of her stable condition and the absence of abdominal distension, observation was continued. The haemoglobin

level dropped from 13.8 gm/dl on admission to 12.4 gm/dl on the 2nd and 11.9 gm/dl on the 4th day. By this time, her abdominal tenderness was very mild and was confined to the left hypochondrium. She tolerated fluids orally, and intravenous therapy was discontinued. After uneventful observation for another 4 days, she was discharged on the eighth day and remained in good health when followed in the surgical clinic up to 8 months later.

Case 3

A 23-year-old negro man was admitted to hospital 2 hours after being hit in the left upper abdomen by the knee of another footballer. He was well-looking with pink mucous membranes, pulse of 108/min and a bloodpressure of 110/70 mm Hg. The abdomen was tender in the left hypochondrium but there was no distension, signs of free fluid or generalised tenderness. X-rays of the chest and abdomen were normal. Because he was haemodynamically stable, careful monitoring was done and intravenous fluids were started. Twenty hours later his haemoglobin level had dropped from 13.2 gm/dl on admission to 11.8 gm/dl. Abdominal tenderness became generalised, and ultrasound showed blood clots around the spleen and free fluid in the abdomen.

Since he was still stable, observation was continued. On the 3rd day, although still haemodynamically stable, the haemoglobin level had dropped to 9.8 gm/dl; his abdomen was moderately distended and tender. Because of the progressively falling haemoglobin level, increasing abdominal distension and tenderness, laparotomy was performed. There were 1,250 ml of blood in the peritoneal cavity with bloodclots in the left hypochondrium. The mobilised spleen, delivered into the wound, was still bleeding from a torn branch of the splenic artery at the inferior aspect of the hilum. There was very little oozing from the full thickness splenic laceration which extended from the hilum to its inferior border. The bleeding artery was ligated and the splenic laceration was repaired with 2/0 catgut. He was given 2 pints of blood during surgery, recovered uneventfully and was discharged on the 8th post-operative day.

DISCUSSION

As shown in our cases, splenic salvage can be achieved non-operatively or by surgical repair of the ruptured spleen. Douglas and Simpson (1971) first documented success with the non-operative management of the ruptured spleen. Subsequent studies have confirmed the efficacy of conservative management in patients who were stable (Ein et al, 1978; Fischer et al, 1978).

In one of our patients (case 2), non-operative treatment was successful, but in the other (case 3) surgery was essential as the patient continued to bleed during the period of observation. Non-operative observation is acceptable in the case of an isolated splenic injury where the patient is haemodynamically stable and careful monitoring is done; if at any time there is deterioration in the patient's condition (as in our case 3), surgery should be performed.

Many other techniques of splenic preservation are now practised. Workers have documented successful conservation of the injured spleen by suture repair (Mishalany, 1974), application of topical haemostatic agents (Morgenstern, 1974), and partial splenectomy (Burrington, 1977). Conservation of the spleen by these techniques has been shown to be quite safe though occasional reports of failed splenorraphy have been published (Van Stiegmann et al, 1979). The decision to conserve or remove the ruptured spleen is a critical one and should be based on the fitness of the patient, the experience of the surgeon and ability to achieve satisfactory haemostasis in each particular case; at no time should one risk the patient's life from continuing haemorrhage in an attempt to conserve the spleen.

The actual technique to be used must be judged by the surgeon in each case. In general, however, topical haemostatic agents are reserved for capsular tears, suture repair for deep lacerations, and partial splenectomy for transection injuries at either pole or ruptures through the hilum that cannot be repaired otherwise.

Sometimes, the spleen is so severely damaged that it is essential to remove it. In these instances, some workers have successfully implanted the autologous splenic tissue into the omentum or in the subphrenic

space and abdominal wall (Lanng-Nielsen et al, 1982; Aigner et al, 1980). The extent to which implanted splenic tissue offers protection against overwhelming post-splenectomy sepsis is still not clear.

Although conservation of the ruptured spleen is desirable in attempting to decrease the incidence of overwhelming post-splenectomy infection, the surgeon should not hesitate to remove a ruptured spleen where haemostasis proves to be difficult. It is the authors' view, however, that many spleens which are removed following trauma can be successfully repaired with little or no risk of continuing haemorrhage.

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